

POSITIONS AND AREAS OF SUN SPOTS—Continued

Date	East- ern stand- ard time	Mt. Wilson group No.	Heliographic			Area		Spot count	Observatory
			Diff. in longi- tude	Longi- tude	Lat- tude	Spot or group	Total for each day		
1938			°	°	°				
Mar. 27...	h m								
	12 32	5826	-78.0	329.4	-20.5	242	-----	2	U. S. Naval.
		5818	+3.0	48.4	-17.0	727	-----	12	
		5818	+19.0	64.4	-13.0	630	-----	5	
		5816	+75.0	120.4	-6.0	12	1,611	1	
Mar. 28...	11 13	5827	-63.0	329.9	-15.0	24	-----	1	Do.
		5826	-61.0	331.9	-20.0	206	-----	1	
		5818	+17.0	49.9	-17.0	727	-----	11	
		5818	+32.0	64.9	-13.0	630	1,587	3	
Mar. 29...	11 19	5827	-51.0	328.7	-15.0	48	-----	5	Do.
		5826	-50.0	329.7	-21.0	291	-----	7	
		5818	+30.0	49.7	-17.0	727	-----	12	
		5818	+45.0	64.7	-12.0	630	1,606	4	
Mar. 30...	10 59	5827	-37.0	329.7	-15.0	73	-----	7	Mt. Wilson.
		5826	-36.0	330.7	-21.0	388	-----	10	
		5828	+11.5	18.2	-21.0	73	-----	5	
		5818	+44.0	50.7	-17.0	727	-----	18	
		5818	+59.0	65.7	-13.0	630	1,891	-----	
Mar. 31...	11 37	5831	-80.0	273.1	-13.0	291	-----	3	Do.
		5830	-78.0	275.1	-26.0	145	-----	1	
		5829	-70.0	283.1	+22.0	24	-----	1	
		5827	-23.0	330.1	-16.0	73	-----	6	
		5828	-22.0	331.1	-21.0	436	-----	8	
		5828	+27.0	20.1	-20.0	48	-----	6	
		5818	+57.0	50.1	-17.0	727	-----	15	
		5818	+73.0	66.1	-12.0	630	2,374	-----	

Mean daily area for 28 days=1553.

PROVISIONAL SUNSPOT RELATIVE NUMBERS FOR MARCH 1938

[Dependent alone on observations at Zurich and its station at Arosa]

[Data furnished through the courtesy of Prof. W. Brunner, Eidgen. Sternwarte, Zurich, Switzerland]

March 1938	Relative numbers	March 1938	Relative numbers	March 1938	Relative numbers
1-----	74	11-----	Ec 134	21-----	86
2-----	d 67	12-----	a 124	22-----	a 64
3-----	62	13-----	161	23-----	71
4-----	d 45	14-----	149	24-----	66
5-----	43	15-----	Mc 145	25-----	59
6-----	Wc 52	16-----	d 159	26-----	b 34
7-----	d 78	17-----	a 138	27-----	d
8-----	Ec 71	18-----	105	28-----	55
9-----	a 97	19-----	80	29-----	Mc 65
10-----	Mac 106	20-----	d 77	30-----	73
				31-----	d 86

Mean: 30 days=87.5.

a = Passage of an average sized group through the central meridian.

b = Passage of a large group or spot through the central meridian.

c = New formation of a group developing into a middle sized or large center of activity; E: on the eastern part of the sun's disc; W: on the western part; M: in the central circle zone.

d = Entrance of a large or average sized center of activity on the east limb.

AEROLOGICAL OBSERVATIONS

[Aerological Division, D. M. LITTLE in Charge]

By L. P. HARRISON

Mean free-air data based on airplane weather and radiometeorograph observations during the month of March 1938 are given in table 1, which includes the basic elements, barometric pressure, temperature, and relative humidity at various standard geometric heights. (Information regarding the methods by which the "means" have been computed is given in the February 1938

MONTHLY WEATHER REVIEW, Aerological Observations.)

Chart I shows that the mean surface temperatures during March were generally above normal over the country except in the extreme West including most of California, Nevada, Oregon, southern Idaho, Utah, and Arizona, where they were below normal.

Table 1 indicates that the mean free-air relative humidities, as in February, were relatively high near Nashville, Tenn., and Spokane, Wash., in comparison to those which prevailed over adjacent regions. They were also relatively low near Pensacola, Fla., at elevations from 2 to 5 kilometers, and generally low in this layer over the extreme southern part of the country except near the California coast, as well as moderately low along the middle Atlantic coast.

Isobaric charts prepared on the basis of mean monthly free-air barometric pressures over the country during March show the locus of the statistical center of low pressure in the lower strata to have been near Fargo, N. Dak., and Sault Ste. Marie, Mich., with the center of high pressure to the southeast near the Florida Peninsula. In the upper levels (3-5 km), the centers were near Sault Ste. Marie, and the Gulf of Mexico respectively. In these levels also, the pressures over central and southern California averaged slightly lower than those over the areas immediately to the east.

Table 2 shows the free-air resultant winds based on pilot-balloon observations made near 5 a. m. (75th meridian time) during March. The resultant wind directions

were generally normal over most of the country, with certain exceptions. At Pensacola, Fla., in the stratum 0.5 to 3 kilometers, the monthly resultants were oriented counterclockwise with respect to the normal by amounts diminishing with height from 200° to 30°. Near Key West, at 2.5, 3, and 4 kilometers, the similar orientations were about 55°, 20°, and 35° respectively. At Oakland, Calif., within the stratum 0.5 to 2 kilometers, the resultants were about 80° to 40° counterclockwise from normal. Similarly at San Diego, Calif., the amounts were about 35° to 20°, diminishing to about 10° at 5 kilometers. In the same way at elevations from 2 to 3 kilometers over Seattle, Wash., the counterclockwise departures were 30° to 65°; from 3 to 4 kilometers, mean sea level, at Salt Lake City, Utah, 30° to 45°; at Omaha, Nebr., from 0.5 to 2.5 kilometers, 65° to 15°; and at Sault Ste. Marie, Mich., same elevations, 105° to 25°.

The monthly resultant velocities of the free-air winds were generally within ± 2 meters per second of the normals. The stations having departures in excess of 3 meters per second and the values thereof were as follows: 0.5 kilometer, Pensacola +3.5 m. p. s.; Cincinnati +3.1; Oklahoma City +3.3; 1 kilometer, Pensacola +3.0; Cincinnati +4.5, Chicago +3.2, Oklahoma City +5.3; 1.5 kilometers, Cincinnati +3.6, St. Louis +3.0, Oklahoma City +4.1; 2 kilometers, Oklahoma City +4.5; 2.5 kilometers, Oklahoma City +3.7, Sault Ste. Marie +3.5, San Diego +3.4; 3 kilometers, Pensacola -3.8, Sault Ste. Marie +4.0, Boston -4.6, Seattle +5.2; 4 kilometers, Key West -4.3, Atlanta -3.3, Sault Ste. Marie +5.8, Albuquerque +3.5, San Diego +3.6; 5 kilometers, San Diego +6.2.

Table 3 shows the maximum free-air wind velocities and their directions for various sections of the United States during March as determined by pilot-balloon observations. The extreme maximum was 70.0 meters per second from the west-southwest at 4,700 meters, mean sea level, over Albuquerque, N. Mex., on March 4.